Before The
State Of Wisconsin
DIVISION OF HEARINGS AND APPEALS

Application of the City of Shell Lake for a Permit to Place a Diversion Structure on the Bed of Shell Lake, City of Shell Lake, Washburn County, Wisconsin	Case No. 3-NO-97-66011

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

The City of Shell Lake applied to the Department of Natural Resources (Department) for a permit to place a structure on the bed of Shell Lake. The Department of Natural Resources issued a Notice of Proposed Structure which stated that unless written objection was made within thirty days of publication of the notice, the Department might issue a decision on the permit without a hearing. The Department did receive several timely objections. On November 10, 1998, the Department referred the matter to the Division of Hearings and Appeals.

Pursuant to due notice a hearing was held on July 7, 8 and 9, 1999, in Shell Lake, Wisconsin, Mark J. Kaiser, Administrative Law Judge, presiding. At the end of the hearing the record was held open for the submission of a delayed exhibit, the final report of the U.S. Geological Survey for its "Simulation of Stage and Hydrologic Budget for Shell Lake, Washburn County, Wisconsin." The exhibit was filed on December 13, 1999. The parties also filed post-hearing briefs. The City of Shell Lake filed its initial brief on January 24, 2000. Objector Trout Unlimited filed a response brief on February 24, 2000, objector Robert Godown filed a response brief on February 25, 2000, and the Department filed a response brief on February 28, 2000. The City of Shell Lake filed three reply briefs, replying individually to each response brief. The reply briefs were all filed on March 6, 2000.

In accordance with secs. 227.47 and 227.53(1), Stats., the PARTIES to this proceeding are certified as follows:

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FINDINGS OF FACT

1. The City of Shell Lake (City or the applicant) is the county seat of Washburn County in northwestern Wisconsin. Its namesake, Shell Lake, is a bowl shaped lake located entirely within the corporate boundaries of the City.

2. Shell Lake is approximately 2580 acres in size with an average depth of 23 feet and a maximum depth of 36 feet. The shoreline of Shell Lake is highly developed. The City has developed a park on land it owns along the shore of Shell Lake. Shell Lake is the largest landlocked lake in the State of Wisconsin. It is a soft water

seepage lake and has a watershed approximately sixteen square miles in size. Shell Lake is a navigable body of water and is considered an excellent fishery. The game fishery consists primarily of walleye, muskellunge, northern pike, smallmouth bass, and several species of panfish. (Exh. 42)

3. During the 1990s the level of Shell Lake has gradually increased. The increasing lake level is partly due to normal cyclical changes in the lake level (Exh. 4) and the increasing amounts of impervious surfaces in the Shell Lake watershed. The increasing amount of impervious surfaces results in more storm water runoff that eventually ends up in Shell Lake.

4. There are approximately 375 homes constructed on properties abutting the shoreline of Shell Lake. The rising lake level has brought the lake up to the foundations of many of the buildings constructed along the shore of Shell Lake. At its current level, the lake also covers much of the yards of many shore line properties and has killed hundreds of trees which were growing along the shoreline. The areas most negatively impacted are the areas with the flattest gradient shoreline.

5. In an effort to reduce the flooding along the shoreline of Shell Lake, the City began to explore methods to lower and stabilize the level of Shell Lake. At this time, the City proposes to siphon water from Shell Lake and discharge it into the headwater of Sawyer Creek.

6. The City proposes to place a water intake structure on the bed of Shell Lake. The end of the intake structure consists of a 24 inch diameter pipe covered by a coarse screen. The intake structure will be placed approximately 350 feet from the existing shoreline at a water depth of ten feet. A pipe connected to the intake structure will be placed on the lake bed until it reaches a water depth of six feet. Beginning at a water depth of six feet a trench will be dug in the lake bed and the intake pipe will be placed in the trench and buried. The proposed project is located in the NE ¼ of the SW ¼ of Section 38, Township 13 North, Range 25 West, City of Shell Lake, Washburn County.

7. The intake pipe will be connected to a control structure on shore in which, by mechanical means, the flow of water may be controlled or completely shut off. From the control structure water will flow into a 12-inch discharge pipe bored below Highway 63 to a discharge structure. The discharge structure will discharge water siphoned from Shell Lake into the headwaters of Sawyer Creek. The system is designed to siphon water from Shell Lake and discharge into Sawyer Creek at a maximum rate of 3 cubic feet per second (cfs). The design of the outlet structure includes a velocity decreaser and an energy dissipator to slow the velocity of the water before it is discharged. Additionally, riprap will be placed at the outlet to further absorb the energy of the discharged water.

8. The ten-foot water depth was chosen for the placement of the intake structure because the water temperature in Shell Lake at this depth is nearly the same as the temperatures of the water in Sawyer Creek. Although the system is intended to

siphon water at a rate of only 3 cfs, the intake pipe was sized at 24 inches because a pipe this large would reduce the velocity of the siphoned water in the intake pipe. This will prevent any whirlpooling of water at the intake structure.

9. As proposed, the siphoning system involves placement of the intake structure and intake pipe on the bed of Shell Lake. A permit pursuant to sec. 30.12(2), Stats., is required for the placement of the intake structure and intake pipe on the bed of Shell Lake. By application dated December 2, 1997, the City applied to the Department for a permit. The Department and the applicant have complied with all procedural requirements of §30.02, Stats.

10. The intake structure the applicant proposes to place on the bed of Shell Lake, will not materially obstruct navigation on Shell Lake and will not reduce the effective flood flow capacity of any stream.

11. The headwaters of Sawyer Creek is also within the corporate boundaries of the City. Sawyer Creek is a meandering stream approximately 5.5 miles long eventually flowing into the Yellow River. The stream bottom is predominantly sand; however, gravel riffle areas are also common. Instream cover consists of undercut banks, logs and trees. In addition, overhanging tag alder is common throughout much of the stream. A 3.6 mile stretch of Sawyer Creek, starting at its headwaters, is classified as a Class I trout stream based on a naturally reproducing population of brook trout. The remaining stretch of Sawyer Creek is classified as a Class II trout stream. Based on photographic evidence presented at the hearing and a videotape (Exh. 29), Sawyer Creek appears to be a navigable waterway.

12. Section NR 102.04(4), Wis. Adm. Code, regulates the water temperature and dissolved oxygen content of water discharged into water classified for fish and aquatic life. The Department and objectors questioned whether the applicant could meet these criteria. However, any permit issued to the City allowing the discharge of water siphoned from Shell Lake into Sawyer Creek would necessarily be conditioned or complying within the requirements of sec. NR 102.04(4), Wis. Adm. Code. Assuming the City can design its siphoning system to comply with these requirements, any concerns about discharging water which will increase the water temperature in Sawyer Creek in summer and lower the water temperature in the creek in winter will be eliminated.

13. The existing stream flow at the headwaters of Sawyer Creek is .3 cfs. The headwaters of Sawyer Creek includes spawning habitat for brook trout. Adding water siphoned from Shell Lake at a rate between 1 cfs and 3 cfs would adversely impact this area as spawning habitat for brook trout. The discharge of the siphoned water would increase the velocity of the stream at the headwaters. The increased velocity would scour the bottom substrate of Sawyer Creek degrading this area as spawning habitat. The increased velocity will also cause erosion of the stream bed and banks. To the extent this sediment is deposited in the spawning area it may cause nest suffocation and result in the significantly slowed emergence of trout fry. (Exh. 11, report of U.S. Army Corps, Exh. 36, summary of the testimony of David Lonzarich)

14. The increased velocity and erosion discussed above would also negatively impact areas in Sawyer Creek used as nursery habitat for brook trout. The stream bank erosion would result in the loss of undercut banks eliminating critical cover for the trout and the increased water velocity may be too high for the fish to maintain their position in the stream. The eroded material will also most likely be deposited in pools further downstream causing the loss of additional trout habitat. (Exh. 11 and Exh. 41, memorandum of Larry Damman)

15. The water in Shell Lake contains algae and zooplankton and the macroinvertebrate community which use algae and zooplankton as their food source. The water in Sawyer Creek contains leafy detritus and the macroinvertebrate community which uses leafy detritus as a food source. The mixing of lake and stream water will change the form of organic matter in the headwaters area. The change in the form of organic matter may significantly impact the food web in Sawyer Creek and negatively impact the ability of the creek to sustain a naturally reproducing brook trout population. The introduction of algae from Shell Lake into Sawyer Creek will also result in a larger biological oxygen demand and could lower the levels of dissolved oxygen in the stream water. Reduced levels of dissolved oxygen will also adversely impact the ability of Sawyer Creek to sustain a naturally reproducing trout population. (Exhs. 36, 41, and 30, memorandum of Jim Cahow)

16. The discharge of water siphoned from Shell Lake into Sawyer Creek will be detrimental to the public interest in Sawyer Creek because it will negatively impact spawning habitat for brook trout at the headwaters of Sawyer Creek and nursery habitat for brook trout in Sawyer Creek. Alterations of the water temperature and water quality in Sawyer Creek which will negatively impact the brook trout population in Sawyer Creek presumably are reversible if it is found that negative impacts have occurred. However, the increase in amount of water and flow rates in Sawyer Creek resulting from the discharge will permanently alter the contours of the stream in terms of stream bed gradients and stream bank slopes and alter the composition of the stream substrate. These alternations will negatively impact habitat of the stream for brook trout and will be irreversible.

17. Because the placement of the proposed structure will be used to discharge water siphoned from Shell Lake into Sawyer Creek which will negatively impact the habitat and the ability of Sawyer Creek to sustain a naturally reproducing population of brook trout, the placement of the structure on the bed of Shell Lake will be detrimental to the public interest.

18. The Department of Natural Resources has complied with the procedural requirements of sec 1.11, Stats., and Ch. NR 150, Wis. Adm. Code, regarding assessment of environmental impact.

Discussion

Generally, pursuant to sec. 30.12(2), Stats., riparians are allowed to place structures on the bed of navigable waters to aid in navigation (or incidents of navigation such as swimming, fishing, hunting, and skating) and to protect their property from erosion (e.g. seawalls and riprap), as long as the structure will not materially obstruct navigation or be detrimental to the public interest. The parties stipulated that the intake structure proposed to be placed on the bed of Shell Lake will not materially obstruct navigation or reduce the effective flood flow capacity of a stream. The only issue is whether the proposed structure will be detrimental to the public interest. The Department and the objectors suggested that the proposed siphoning may be detrimental to the public interest in Shell Lake because it will result in excessively low lake levels during periods of below average precipitation. This impact is speculative and is also based in part on the assumption that once the discharge into Sawyer Creek begins it will be necessary to continue the discharge during periods of below average precipitation to avoid catastrophic effects to the fishery in Sawyer Creek. Based on the evidence in the record, with appropriate management of the siphoning, adverse impacts to the public interest in Shell Lake can be avoided.

The primary issue in this matter is whether the discharge of the siphoned water from Shell Lake into the headwaters of Sawyer Creek will be detrimental to the public interest in Sawyer Creek. The City raises as a threshold legal question whether impacts to Sawyer Creek can be considered within the scope of an application for a permit to place a structure in Shell Lake. The public interests consideration in sec. 30.12(2), Stats., is in reference to the Department's responsibility under the Public Trust Doctrine. The Department's responsibility under the Public Trust Doctrine applies to all navigable waterways in the state. The proposed use of the structure will directly impact fish habitat in Sawyer Creek. It is appropriate to consider this impact when determining whether the proposed structure will be detrimental to the public interest.

Witnesses at the hearing described three primary negative effects discharging the water siphoned from Shell Lake into Sawyer Creek would have on trout habitat in Sawyer Creek. The first effect is changes in the water temperature and dissolved oxygen content in the waters of Sawyer Creek. Sawyer Creek is a cold water fishery. A concern was raised that the water siphoned from Shell Lake would be warmer than the existing water in Sawyer Creek during summer months. A potential exists that the overall temperature of the water in Sawyer Creek would be increased during summer months to the extent that it would present a threat to the brook trout population in Sawyer Creek. The proposed structure will be placed at the ten-foot water depth. Witnesses for the applicant testified that this particular depth was chosen because at this depth that the water temperature in Shell Lake matches that of Sawyer Creek during summer months.

Assuming this is true, the witnesses for the Department and objectors also raised a concern that during the winter months, water at the ten-foot depth in Shell Lake would be colder than the water in Sawyer Creek during those months. This would result in

lowering of the overall temperature of the water in Sawyer Creek during winter months. The lowering of the water temperature during the winter months would also negatively impact the brook trout population in Sawyer Creek, particularly interfering with reproductive activity. Another concern raised by witnesses for the objectors regarding taking water from the ten-foot depth of Shell Lake was that water at that depth would have a lower content of dissolved oxygen than the water in Sawyer Creek. Mixing this water with the existing water in Sawyer Creek would result in an overall decrease in the levels of dissolved oxygen in the waters of Sawyer Creek. Reduced levels of dissolved oxygen would also negatively impact the brook trout population of Sawyer Creek.

Section NR 102.04(4)(e), Wis. Adm. Code, establishes standards for trout waters. Specifically, NR 102.04(4)(e), Wis. Adm. Code, requires that "[s]treams classified as trout waters by the department of natural resources . . . may not be altered from natural background temperatures and dissolved oxygen levels to such an extent that trout populations are adversely effected." Subparts 1 and 2 of sec. NR 102.04(e), Wis. Adm. Code, specifically provide that "[t]here shall be no significant artificial increases in temperature where natural trout reproduction is to be protected" and "[d]issolved oxygen in classified trout streams shall not be artificially lowered to less than 6.0 mg./L at any time, nor shall the dissolved oxygen be lowered to less than 7.0 mg. /L during the spawning season." Any permit issued to the City which would result in the discharge of water into Sawyer Creek would necessarily have as a condition of that permit compliance with sec. NR 102.04(e), Wis. Adm. Code.

The City is aware of these requirements and accepts them. The Department and the objectors question whether the City would be able to meet such a condition. However, this is an engineering question, not a factual or legal issue for this hearing. If the City determines that it is unable to meet this condition, obviously it will be unable to use the proposed structure to siphon water from Shell Lake and discharge it into Sawyer Creek. Certainly it is possible to design a system which would satisfy these conditions; however, the question for the City would be whether it could be done at a cost that would be reasonable considering the potential benefits from the proposed siphoning of water from Shell Lake to the City and other riparians along Shell Lake.

The second effect on mixing lake water with the existing water in Sawyer Creek is the quality of the water. The water of Shell Lake is clean; however, as lake water it contains algae and the accompanying algae based macroinvertebrates. The existing water in Sawyer Creek supports a community of leafy, detritus material consuming organisms. Mixing water from Shell Lake with the water in Sawyer Creek would have an impact on the food web in Sawyer Creek. Whether or not this change in the base of the food chain would be significant is unclear. Regardless, presumably any negative impacts could be reversed by stopping the discharge and allowing the macroinvertebrate population in Sawyer Creek returned to its present condition. Any negative impact resulting from a change in the macroinvertebrate population does not appear to be irreversible.

The third effect resulting from discharging siphoned water from Shell Lake into Sawyer Creek is an alteration of the contours of the stream and flow rates of water into

the stream. The headwaters of Sawyer Creek presently is excellent spawning habitat for brook trout. Downstream from the headwaters Sawyer Creek also has excellent nursery habitat for brook trout. The flow rate at the headwaters of Sawyer Creek is approximately .3 cfs. Adding an additional 3 cfs to this stream at this location would greatly alter the nature of the stream. Increasing the water volume in Sawyer Creek by this magnitude, would alter the contours of the stream. This would significantly alter and potentially eliminate the spawning habitat at the headwaters of Sawyer Creek and the shallow pools and cover downstream which provide nursery habitat for brook trout in Sawyer Creek. Additionally, once Sawyer Creek was reshaped to carry the additional volume of water siphoned from Shell Lake, if the discharge was stopped, the resulting stream would be a wider, shallower waterway with less stream to bank contact than the current Class I trout stream portion of Sawyer Creek. The alternations in the contours of the bed and banks of the stream could not be reversed if it was determined that these alterations negatively impacted the spawning habitat and nursery habitat for brook trout in Sawyer Creek.

In addition to changing the stream contours, the additional volume of water would increase the velocity of the water flow in Sawyer Creek. An increase in the velocity of the water flow would negatively impact the ability of the existing brook trout population to feed in Sawyer Creek and would also result in them expending more energy to live in Sawyer Creek. The increase in the volume of water in Sawyer Creek resulting from discharging the siphoned water from Shell Lake into Sawyer Creek will negatively impact the habitat in this stream and threaten the naturally reproducing brook trout population currently existing in that stream.

The City and other riparians along Shell Lake are attempting to balance protection of their shoreline from the rising water levels in Shell Lake with protection of the Sawyer Creek fishery and its status as a class I trout stream. To that extent they have downsized their request from a discharge of 15 cfs to 3 or even less cfs. As a result of scaling back of their request, they now have a proposed project that apparently will produce little, if any, protection from the rising lake levels of Shell Lake. The City acknowledges it may be constructing a "white elephant" and is willing to accept that risk. However, sec. NR 102.05, Wis. Adm. Code, requires an affirmative showing that the lowering in quality of a waterway is justified. To have minimal impact on Sawyer Creek, the U.S. Fish and Wildlife Service recommends limiting the discharge into Sawyer Creek to a rate of 1 cfs for five months a year. Testimony at the hearing was that a discharge of 3 cfs would reduce the water level in Shell Lake at 1220 msl by one inch per month. Extrapolating from this figure, a discharge of 1 cfs at that water level would reduce the lake level by only 1/3 of an inch per month. Allowing siphoning for only five months a year would result in a net lowering of 1 and 2/3 inch per year. This modest benefit does not justify the threat to Sawyer Creek.

Assuming the City is willing to accept even this modest benefit from its investment in the proposed structure, it still faces a no-win situation. Testimony at the hearing was that once siphoning is started, subsequently stopping the discharge would have other negative impacts. Despite the City's clear willingness to accept whatever

conditions are necessary to protect the status of Sawyer Creek as a Class I trout stream, it does not appear that any reasonable set of conditions can be developed that would provide sufficient protection to Sawyer Creek. The City has three alternatives for the discharge of the water siphoned from Shell Lake. One is discharging the water into the Clam River, another is discharging it into a sinkhole that would be constructed specifically for this purpose, and a third is to discharge the water further downstream in Sawyer Creek. All these alternatives would cost substantially more than the current proposal to discharge the siphoned water into the headwaters of Sawyer Creek both in terms of initial construction costs and annual operating expenses. The City rejected these alternatives because of the increased cost.

In summary, conditions can be placed on the discharge of the water siphoned from Shell Lake into Sawyer Creek that would not substantially degrade Sawyer Creek. However, even modest flow discharges at the headwaters of Sawyer Creek would negatively impact this area for use as spawning and nursery habitat for brook trout and is; therefore, detrimental to the public interest. Additionally, the conditions necessary to minimize the adverse impacts to Sawyer Creek would result in a rate of discharge that would not provide significant relief to the problems resulting from the rising water level of Shell Lake. It is appropriate to balance the benefits from a proposed project with the harm to the public interest. It is also appropriate to consider whether the applicant has other alternatives to accomplish its goals. In this case, the applicant has alternatives, although admittedly substantially more expensive, which can be used as a discharge site for the water siphoned from Shell Lake. For these reasons the application for a permit must be denied.

CONCLUSIONS OF LAW

1. The City of Shell Lake is an owner of land riparian to Shell Lake. Shell Lake is a navigable body of water.

2. Pursuant to sec. 30.12(2), Stats., a permit is required to place the proposed intake structure on the bed of Shell Lake.

3. The proposed structure is a type III action pursuant to sec. NR 150.03(8)(f)4., Wis. Adm. Code. Pursuant to sec. NR 150.01(b), Wis. Adm. Code, a type III action does not require the preparation of an Environmental Assessment or Environmental Impact Statement.

4. The proposed intake structure will not materially obstruct navigation and is not detrimental to the public interest in Shell Lake.

5. The public interest determination pursuant to sec. 30.12(2), Stats., is not limited to the body of water in which a structure is proposed to be placed. Pursuant to the Public Trust Doctrine, the Wisconsin Department of Natural Resources has responsibility

to protect the public interest in all navigable waters in the state. Sawyer Creek is also a navigable waterway.

6. The applicant has the burden of proof to show that the proposed intake structure will not be detrimental to the public interest in navigable waters. The applicant has not shown the proposed discharge of the water siphoned from Shell Lake into Sawyer Creek will not be detrimental to the public interest in Sawyer Creek.

7. The Division of Hearings and Appeals has authority pursuant to secs. 30.02, 30.12, and 227.43(1)(b), Stats., to issue the following order.

ORDER

IT IS THEREFORE ORDERED that the application of the City of Shell Lake for a permit to place a structure on the bed of Shell Lake pursuant to sec. 30.12(2), Stats., is hereby denied

Dated at Madison, Wisconsin on May 5, 2000.

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By _____
MARK J. KAISER
ADMINISTRATIVE LAW JUDGE

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